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AN AUSTRALIAN LEPTANILLA

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The very interesting Formicid subfamily Leptanillinae comprises only two genera of minute, yellow, blind and hypogæic ants, namely, *Leptanilla*, established by Emery as long ago as 1870 and *Phaulomyrma*, established by G. C. and E. W. Wheeler in 1930 on a male specimen from Java. This genus probably also includes Santschi's *L. tanit* from Tunis. Of the eleven described species of *Leptanilla*, four are known only from males; of the remaining seven, five are known only from workers and only two from both workers and females. The geographical distribution of the various species is peculiar. Six of them, namely, *L. theryi* Forel, *vaucheri* Emery, *exigua* Santschi, *minuscule* Santschi, *nana* Santschi and *tenuis* Santschi, were taken in North Africa (Algiers, Tunis, Morocco), two, *doderoi* Emery and *revelierei* Emery, in Corsica and Sardinia (though the subspecies *chobauti* Emery of *revelierei* occurs in Morocco), two, *havilandi* Forel and *butteli* Forel, in the Malay Peninsula and one, *santschii* G. C. and E. W. Wheeler, in Java.

During November, 1931, while I was with the Harvard Zoölogical Expedition in Australia, Mr. D. C. Swan of the Waite Institute at Glen Osmond, S. A., generously gave me some minute ants which he discovered in Western Austra-

lia. The collection comprises two dozen workers, a female and a number of full-grown larvæ, which prove to belong to an undescribed species of *Leptanilla*. They therefore considerably extend the known geographical range of the genus. Owing to the fact that the *Leptanillinæ* are true members of Silvestri's "microgenton" and that their workers and females are very rarely seen, because they come to the surface of the soil only under unusual conditions, such as excessive rainfall, it is too early to regard the various species at present known as covering the entire range of the genus. We should expect careful collecting with the Berlese funnel to bring additional forms to light in South Africa, Madagascar, Asia Minor and India, or even, perhaps, in the warmer parts of the New World.

Leptanilla swani sp. nov.

Worker. (Fig. 1, a-d.) Length 1.3-1.5 mm. Pale yellow; legs scarcely paler than the body; teeth and borders of the mandibles reddish.

Head flattened above, oblong, fully $1\frac{1}{2}$ times as long as broad, as broad in front as behind, with subparallel sides, rounded posterior corners and feebly concave posterior border. Mandibles narrow, with very oblique 4-toothed apical borders, the terminal tooth curved and acute, the second minute, the two remaining teeth stout and rather blunt, the most basal directed at right angles to the apical border or even slightly backward. Clypeus without distinct posterior suture, its anterior border slightly but distinctly produced in the middle as a broadly rounded lobe, excised at the sides. Antennæ moderately stout; scapes reaching nearly to the middle of the head; basal funicular joint nearly $1\frac{1}{2}$ times as long as broad, ovoidal, with constricted base; joints 2-6 distinctly broader than long; the second basally constricted, the seventh distinctly longer, 8-10 as broad as long, the terminal joint as long as the two preceding joints together. Thorax much narrower than the head including the mandibles, flattened dorsally and not deeply notched in profile at the promesonotal suture; pronotum subovoidal, somewhat broader than the mesepinotum, which is longer than the pronotum, with feebly rounded, subparallel sides. Petiole much narrower than the epinotum,

nearly $1\frac{1}{2}$ times as long as broad, gradually narrowed anteriorly, posteriorly with rounded-subparallel sides. Post-petiole rounded-trapezoidal, nearly as long as broad, somewhat broader than the petiole and somewhat wider behind than in front, its ventral surface convex and projecting. Gaster narrow, elongate-elliptical, anterior border of first segment slightly concave. Sting large, retracted. Legs mod-

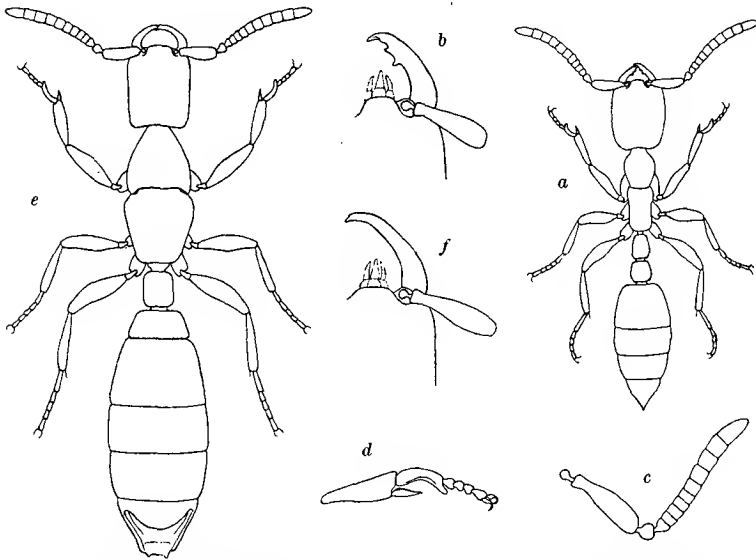


FIG. 1. *Leptanilla swani* sp. nov. a, worker; b, clypeus and mandible of same; c, antenna; d, fore tibia and tarsus; e, female; f, clypeus and mandible of same.

erately stout, tips of fore metatarsi produced and digitiform, but not so narrowly as in *L. nana* Santschi.

Shining, with very fine and indistinct piligerous punctures. Pilosity white, very short, abundant both on the body and antennæ, slightly longer and coarser on the gaster, less conspicuous and more dilute and appressed on the legs.

Female. (Fig. 1, e and f.) Length 2 mm.

Color, sculpture and pilosity as in the worker, but the hairs on the gaster very long, though fine, as in the female of *L. theryi* Forel.

Apterous and resembling the worker in form but differing in the following characters: Head more sharply oblong, with straight and more clearly parallel sides. Mandibles falcate, narrow and tapering at the tips, without distinct basal and apical borders, terminating in two small, indistinct, closely approximated teeth. Clypeus broader and less produced than in the worker. Thorax decidedly longer than the head plus the mandibles, very low and flat above, the pronotum posteriorly nearly as broad as the head, longer than broad, with feebly rounded, anteriorly converging sides, mesepinotum broader than the head, subtrapezoidal, broadest near the anterior end, roundly subtruncate behind. Promesonotal suture pronounced, straight and transverse in the middle. Petiole regularly oblong, about $1\frac{1}{4}$ longer than broad, as broad in front as behind. Gaster much larger than in the worker, the postpetiole, which forms its first segment, nearly twice as broad as long, subtrapezoidal, with straight anterior border. Genitalia similar to those of *L. revelierei* Emery, but the pygidium with entire, broadly and semicircularly rounded posterior border, not notched in the middle. Hypopygium large, narrowed and bluntly bidentate posteriorly. Legs longer and stouter than in the worker.

Described from 24 workers and a single female taken Oct. 10, 1931 by Mr. D. C. Swan under a large stone at Goyamin Pool, Chittering, Western Australia.

L. swani seems to be most closely related to *L. revelierei*, but the female of the latter has a much shorter petiole. In the long pilosity of the gaster the female of the new form resembles *theryi*, but in this species the petiole is very different, being distinctly cordate anteriorly instead of oblong.

Dr. G. C. Wheeler, to whom I sent the larvæ of *L. swani* for study, writes me that he found them "extremely interesting because of their close resemblance to the larvæ of *revelieri* subsp. *sardoa*. They even have the 'tympanum' which is difficult to detect unless the specimens are stained. This species differs from *sardoa* in the following characteristics: (1) The head is sharply constricted just in front of the middle so that in dorsal view it is flask-shaped or key-hole shaped; the posterior half is circular, the middle half

is about half as wide and has subparallel sides. (2) The prothorax is sparsely spinulose while the curious structure on its ventral surface has its base densely and coarsely spinulose. (3) The two extremely long hairs at the posterior end are lacking in all specimens."

Emery, as is well known, regarded the Leptanillinae as constituting a special tribe of the Dorylinae, but Dr. G. C. Wheeler and I have raised the group to subfamily rank. Unquestionably, Emery, in his paper of 1904, based his opinion very largely on the singular characters of the female, which he regarded as a true dichthadiigyne and compared with the female of *Aenictus*. Strangely enough, Emery seems not to have noticed the peculiar falcate shape of the female mandibles, so unlike those of the worker, a character which, taken together with the absence of wings and the single segment of the pedicel, makes the resemblance to the females of the Dorylinae even greater than he supposed. But the males of the Leptanillinae and the larvae, as described and figured by G. C. Wheeler, are so very unlike those of the Dorylinae that we are bound to regard the striking similarities of the females as due to convergence. Emery's original interpretation of the thoracic segmentation of the female *Leptanilla* was incorrect, because he regarded the portion of the thorax anterior to the pronounced transverse dorsal suture as the mesonotum, the portion posterior to the suture as the combined metanotum and epinotum. In a foot-note to his section on the Leptanillinae in the "Genera Insectorum" (1910), he recognized his error and adopted the interpretation which I have also reached, namely, that the presutural portion is the pronotum, the postsutural the combined meso- and epinotum.

The occurrence of indigenous species of *Leptanilla* on islands like Corsica, Sardinia, Java and Australia is significant. Since the females are apterous and obviously too small and delicate to endure distant transportation in flotsam and jetsam, we must suppose that they have occupied their present habitats since the islands mentioned were connected with the mainland. The Leptanillinae, therefore, must be very ancient, like many other components of the microgenton (*Koenenia*, *Paucopus*, *Scolopendrella*, *Camptodea*, *Iapyx*, etc.) *L. swani* is particularly interesting in

this connection, because the extreme southwestern corner of Australia, in which it was taken, is known to possess the oldest and least disturbed fauna of any portion of the continent.

LITERATURE

- Emery, C.* Studi Mirmecologici. Bull. Soc. Ent. Ital. 2, 1870, pp. 193-201, 1 pl.
- Emery, C.* Le affinità del genera *Leptanilla* e i limiti delle *Dorylinæ*. Archiv. Zool. Ital. 2, 1904, pp. 107-116, 9 figs.
- Emery, C.* Formicidæ, subfam. *Dorylinæ*, in Wytsman's Genera Insectorum, 1910, pp. 32-33.
- Wheeler, G. C.* The Larva of *Leptanilla*. Psyche 35, 1928, pp. 85-91, 1 fig.
- Wheeler, G. C.* and *E. W.* Two New Ants from Java. Psyche 37, 1930, pp. 193-201, 2 figs.